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Plagues and Diseases in History

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Abstract

In spite of the development of the medical science, during the twentieth century, individuals have observed the spread of new or reemerging diseases, from plague, cholera, and flu; measles, cancer, and malaria; to acquired immune deficiency syndrome, West Nile fever, resistant tuberculosis, virus of Ebola, Creutzfeldt-Jakob disease, and others. As individual illness is rooted in society and the environment, human life is tied up with the history of main endemic and epidemic diseases. Human health is very sensitive and adaptable to changes, so the history of disease and hygiene is the core of the new ecological history.

Disease is the sting of death and death is the necessary victory of the grave. If according to Xavier Bichat, life is resistance to death, it may be said that life is resistance to disease. Disease is involved in the mechanism of adaptation – that is, of attack, equilibrium, and defense – of the living being to its habitat. Human development and evolution, in its social, cultural, and ecological setting, might give rise to alterations in the human organism, both in body and mind, against which it must struggle. The evolution of the species, society, and culture takes place within a given environment, and this environment may alter the pathological spectrum. The human being seeks Hippocratic and Aristotelian equilibrium but, in doing so, it is frequently subjected to changes and movements that endanger this quest. As the Hippocratic texts teach, human nature is part of sacred Nature, and human life is inserted in Nature's life. Similar concepts may be found in the East in ancient Chinese and Indian cultures and in the West perhaps in the pre-Columbian cultures.

This Hippocratic thought is now renewed by ecological history, and ecological movements, highly influenced by the history of disease and the history of hygiene. As individual illness is rooted in society and the environment, human life is tied up with the history of the main endemic and epidemic diseases. It is also tied up with the history of environment: according to the new ecological history, human society develops in a cultural, biological, and physical *milieu*, acting and reacting on each other. Lands where we live are increasingly modified by human action. We are, and we will be, living the changes produced by human action (deforestation, industry, mining, new energies such as radioactivity from warfare and power stations, etc.) on the environment (biological and physical). If we hurt the Earth, Nature may hurt us. Human health is very sensitive and adaptable to changes, so the history of disease and hygiene is the core of the new ecological history.

These changes, quite frequently, depend on the human being itself, on its customs and knowledge, its social groupings, or its settlements, which lead it to avoid malaria by settling in mosquito-free zones or to control smallpox by vaccination. On other occasions, such changes do not depend on the human being but arise in the environment or within the diseases themselves, which may appear or disappear, or simply change their characteristics, of their own accord, as was the case with

the 'sweating sickness' (*sudor anglicus*). On yet other occasions, these changes are merely due to cultural appreciations, as it has happened with certain sexual practices such as masturbation or homosexuality, which used to be framed as stigmatized diseases. On the other hand, disease is not always considered only harmful: thus it may be considered a distinction of the Gods, as was the case of epilepsy in ancient times, or among some historical aboriginal tribes. Nevertheless, the Hippocratic text *On the Sacred Disease* established the natural condition of this illness, similar to other medical affections. The same disease was associated with the devil by the Christians, and historically, it had always been a supposed distinction of great personages from Caesar to Napoleon. Disease can also be considered a way toward perfection or transformations, leading to the creation of art or to the salvation of the soul, as melancholy or sorrow were for centuries.

Disease may also have political repercussions: it is claimed that George the Third's madness gave rise to problems for the British Crown, while Roosevelt's fragile health was considered to have placed him in a weak position in the Yalta negotiations. Socially, disease has sometimes unjustly been considered the stigma of groups (as acquired immune deficiency syndrome (AIDS) for homosexuals, and poor or marginal groups, or alcoholism for black or aboriginal peoples). Medicine and politics have endeavored to preempt social changes by means of the contested eugenic theories and practices of social engineering, inspired by Francis Galton at the end of nineteenth century, which began with recommendations or laws to avoid marriages entailing risks (real or imaginary), and went on to such processes as sterilizations. Heredity is today considered an important predisposition for disease, but mostly not in a deterministic way. Hereditary conditions are thus intertwined with cultural, social, religious, and moral ones. Besides, in contrast with the stark determination of former times, there is today an attempt to draw new optimism from the possibilities of genetic modifications. Yet, in this latter respect, there is fear of a future where such a formidable force could rest in the hands of the rich and powerful.

An important renewal in the study of infectious diseases was driven by bacteriological discoveries, and the theories about infection and immunity. In this respect, Hans Zinsser in *Rats, Lice, and History* combined them with human history, proposing biographical interpretations of epidemiological

history. The study of the transmission of pathogens through animals and human beings (as vectors and hosts), living in a physical, biological, social, and cultural environment, was crucial in bringing about a new history of disease and also much later in fueling the most recent ecological history. In the meantime, the essential contributions of historical demography and social history licensed the consideration of the history of diseases as 'biographies,' shared by human cultures, living beings, and natural environment. But with the development of accurate technologies of diagnosis, the real identification of old plagues is more and more demanding.

Ancient and Medieval Times

Paleopathology enables us to discover the high incidence of diseases in the early inhabitants of the Earth, especially where such diseases left their mark on bones. It is thus possible to detect remnants of tumors, infections, necrosis, osteoporosis, and malformations, as also traumatism, dental alterations, rickets, rheumatism, and other diseases of the bones. Today, laboratory analysis allows the possibility of detecting remnants of other diseases, germs, or lesions, in animal or human remains, including of course the famous mummies. From the first settlements in the Fertile Crescent, changes have taken place in the relationship of man and animals with their environment and it is possible to establish an extensive catalog of diseases that have largely subsisted down to this very day. Particularly significant are the forms of settlement, the crops and hunting, and the contact of man with cattle, pets, and parasites, as well as the relations between peoples, through mixing and trade, wars, and migrations.

Malaria originated in tropical Africa, accompanying the dawn of humanity, from plasmodia infecting animals and hominids. Caused by different plasmodia (*Plasmodium vivax* and *Plasmodium falciparum* among others, with different geographical distribution), its relation with human populations is shaped by migrations and deforestation, hunting and farming, climate and soils, crops, animals and foods, and a complicated immunity resulting from ancient genetic mutations and new infections. Thus, with the early human emigrations, it expanded through Eurasia, and in the third millennia BC, malaria had already set in the early civilizations in marshy areas where the water, the climate, and the crops provided the conditions for the *Anopheles* mosquitoes to infect in crowded populations. Evidence for the existence of intermittent fevers is already to be found in ancient cultures, finding suitable conditions along the Yellow, Indus, Ganges, Euphrates, or Nile Rivers.

Different interpretations considered the disease to originate from climatic or environmental factors, from particles or small animals, because of spirits or gods, or from unbalanced or disharmonic alterations. The connection between fevers, splenomegaly, and marshy areas appears in the Hippocratic texts, such as *On Airs, Waters and Places*. Deforestation, agriculture, temperature, and a greater population density, as well as military and commercial movements, favor the spread of the disease. In Italy, in Republican times, the disease becomes acute; and it was recommended that the marshy lands be either abandoned or sold and that people should dwell on high

ground – the latter being traditional advice and here defense reasons also counted. Also, the cleaning and draining of swamps was considered, this being the origin of systems of engineering sanitation. The spread of malaria got worse and worse in Rome owing to negligence and flooding, climate and agricultural changes, wars, travels, and migrations, and it reached its zenith at the time of the fall of the Roman Empire, a cataclysm to which it may have contributed. But when the old Empire declined, another frightening ghost traveled through the Mediterranean Sea.

Plagues were considered in ancient cultures as diseases originating in God's punishment, with a violent pattern, and quick and terrible diffusion, affecting and killing a large number of persons. Destructive epidemic catastrophes were narrated frequently in Mesopotamian, Biblical, Egyptian, Indian, or Chinese sources, and in 430–426 BC, Thucydides describes the plague of Athens in the war against Sparta, but it is doubtful that this case refers to the bubonic plague. This epidemic death is considered the beginning of the decline of Athenian hegemony, the crisis of the democracy, and culture of the Pericles era. Fear, war, siege of the city, and its maritime port were accompanied by the death of the great ruler Pericles. Later on, the first reliable description of this disease is that given by Rufus of Ephesus in the AD first to the second century, in the epoch of Trajan; and in the sixth century, the Plague of Justinian initiates the first great epidemic cycles of bubonic plague. Soldiers and merchants, animals and merchandises, and slaves and prisoners all contribute to linking up the extremes of the known world. A consequence of this contact was the Antonine Plague in the second century. This plague – and others – is attributed to smallpox, a disease that had already existed as far back as 3000 years ago, as certain mummies show.

In the Middle Ages, leprosy spread widely, allegedly as a result of the increasing East–West relations through trade, travels, and wars. This biblical and present day disease is accompanied by social repulse and malignant connotations since dirtiness and overcrowding provided the conditions for the spread of the otherwise not extremely contagious *Mycobacterium leprae*. In this respect, the way to Santiago de Compostela where pilgrims slept in groups and under unhealthy and dirty conditions provided a fertile ground for this disease. Another markedly religious character is to be found in the 'Sacred Fire,' 'St Anthony's Fire,' or ergotism; a disease that developed in people eating rye infected by ergot, it was soon prevented, but reappeared during the course of severe famines.

These diseases are linked to many others that owed their spread to squalor and poverty, for example, parasites and infections, scabies, mycoses and lice, anthrax and ophthalmia. Natural catastrophes, wars, poverty, and famines were escorted by mental diseases, tuberculosis and pneumonia, traumatism and poisonings, diarrheal diseases and fevers, as well as smallpox and measles. In the Mediterranean basin, malaria continued to be endemic with the population tending to resort to residing on the hills and mountains, far from marshy lands. The extension of malaria involved south and southeast of Asia, Central China and Japan, and also North Europe. The plague set in the growing cities with the burden of rats and fleas, making this disease an explicative example par excellence of epidemic history. A second epidemic cycle began with the Black Death in 1348. Commerce and the cities collapsed, giving rise

to the origin of the modern European kingdoms. At this time, Venice established control over persons and ships, in order to avoid the spread of plague, arriving from distant lands. Dark Ages are ending, and New Worlds are opening in culture and geography.

Modern Times

European expansion meant a sudden traffic of diseases mostly toward the New World. The discovery of America, with its scattered population devoted to agriculture, where there were no dirty cities, and where the inhabitants were devoid of immunity to the diseases of old Europe, produced an enormous demographic crisis. Certain diseases, such as smallpox (and measles) ravaged the indigenous population; this very contagious and harsh illness was introduced in the Caribbean and Mexico, and destroyed American indigenous populations. Syphilis came supposedly from America (although other human treponematoses were present in other continents), brought back by the Spaniards and it caused havoc since Renaissance in Europe and soon all around the world. Troop movements spread an unknown disease called 'tabardillo,' or 'typhus exanthematicus,' bringing about serious suffering for armies and poor people. Sea voyages led to the development of scurvy, due to the lack of fresh food.

Other diseases also voyaged overseas, such as yellow fever; although it originated from Africa, due to the commerce of slaves and merchandise, special temperature conditions and mosquitoes as vectors were required for the contagion. In the seventeenth century, it took root in Brazil and also spread to the Caribbean and throughout America, reaching New York and Boston and likewise Colombia, Ecuador, and Peru. It affected warm America and Europe, through the Iberian Peninsula. Immunity and cutoffs in commerce stalled the disease, but it remains endemic in tropical areas of America and Africa. Also, malaria arrived to America with the European conquest in sixteenth century, beginning in the Caribbean and Central America and soon spreading to South and North America, becoming endemic in hot, wet, and low lands. Malaria was combated since the seventeenth century by the use of cinchona bark (*Peruvian bark*), found in Peru, as an indigenous medical practice. Later on, the quinine – the alkaloid obtained from the bark in French laboratories – gave rise to rich industry and trade. Trees were cultivated in British and Dutch colonies, mainly in Java. After being taken in the Second World War by the Japanese army, synthetic products such as atabrine and chloroquine were obtained. Getting worse with agriculture, mining and livestock changes, settlements, and slavery trade, malaria became – together with yellow fever – a scourge along the warm and hot reaches. Throughout the American conflicts between European empires, and later during the American Independence Wars, both diseases played an important role, infecting and killing nonimmune soldiers.

Plague slowed demographic growth in Europe since the wars between modern and powerful nations, the crowded and dirty cities, and the developing trades impeded protection against the disease. The great writer Daniel Defoe remembered the terrible contagion in London in 1665 in *Journal of the Plague Year*. After the great European plague of Marseille in 1720, the

relative peace of the eighteenth century allowed Western Europe to set up sea and land defenses, with Austria becoming a solid bulwark in the face of the Ottoman Empire, thus sealing off all possible spread of the plague. Toward the middle of the nineteenth century, the third wave of the disease broke out and, with the exception of Europe, it spread to all countries including Asia, Africa, and paradises like America and Australia, leaving remnants in many places. The eradication of plague in Europe was a result of the advent of public hygiene, immunity to disease, and the disappearance of rats and of the old and dirty wooden buildings. The great London Fire in 1666 'purified' the city, since the hygienic rebuilding was carried out in stone, eliminating animals and dirt.

The disappearance of plague from Europe was followed by the outbreak of cholera, which had been endemic in India for centuries. This disease was described by Western travelers in the sixteenth century and its spread to Europe and America was a consequence of pilgrimages, trade, and a lack of cleanliness in water. A great pandemic broke out in 1817 from India and spread through Eastern Africa and Southern Asia, arriving to China and the Philippines, and in a second wave, it spread through Persia reaching Russia and Poland in 1830. Then this second wave swept across Europe and reached America by 1832. Throughout 100 years, terrible waves spread from the East. However, the timely and necessary cleansing of urban water supplies helped to progressively stall its advance. Nevertheless, as late as 1892, the free Hanseatic City of Hamburg suffered an outbreak of cholera epidemic, while the neighboring Altona, governed by the Prussian Reich, was able to avoid the disease, thanks to the successful filtering of its water. Local and national governments advanced in hygiene and they attempted to bring about healthier cities by means of appropriate public health measures. The nineteenth century sees the beginning of the demographic revolution in Europe, followed by developing countries, in America for example, with a sharp decline in mortality, especially maternal–infant mortality. Old inoculation and the new vaccination proposed in 1798 by Edward Jenner fought smallpox successfully. Studies about human immunity since the last decades of nineteenth century began a new medical approach to the prevention and understanding of illness, being successful in the contention of many diseases, which have a long record of burdens and deaths. Mother care also advanced both throughout pregnancy and at childbirth and during lactation.

The rise of great and industrial cities with low-grade outskirts and the emigration of peasants to the city favored the spread of maladies associated with poverty, hard work, squalor, lack of appropriate food, and exposure of people devoid of defenses. Some of the diseases were strictly occupational as in the case of miners and textile workers who were exposed to injury, and to industrial poisons that affected the proletariat. Sir Percivall Pott described in the eighteenth century the cancer produced in professional cleaners (chimney sweep) by chemical toxics contained in soot. Many other diseases, such as cancers, will be attributed to chemical and physical aggressions, including radioactivity. Other diseases were closely related to the harsh and dirty conditions of life such as spread of typhoid fever and pulmonary diseases. Tuberculosis spread over the turn between the eighteenth and nineteenth centuries, and while it was represented as the disease in fashion, affecting

notable and distinguished people, it struck the proletariat much more severely. The same can be claimed regarding the enormous spread of syphilis, and drug abuse, beginning with alcohol and continuing with cocaine and morphine.

Contemporary Times

The discovery of the microbiological origin of infectious diseases, and of effective therapies against them, and the development of public health changed the pathological landscape in developed countries. The long way between Ignaz Semmelweis and Alexander Fleming arrived to the contention of infections in health care. The twentieth century marked the descent of the high mortality rates in countries that reached high standards of sanitary development, investing in health care and public health. Such advances have been due to public health services, hospitals, antibiotics, surgery, and vaccination, and they have been reinforced by the developments in immunology and microsurgery, pharmacology, and biotechnology and with the promising future of genetic engineering. The international health solidarity promoted by the World Health Organization (WHO), and other governmental and nongovernmental organizations (NGOs), including church missionaries, were accompanied by better governance of nations, and internationalization of information and resources. The twentieth century established a serious change in geopathology of diseases. Smallpox is the first disease to be considered totally eradicated with only some samples of the virus being kept at a few laboratories for study purposes.

A Cuban doctor (Carlos Finlay) found the method by which yellow fever is transmitted through mosquitoes (*Aedes aegypti*). After the Cuban War and during the opening of the Panama Channel, yellow fever and malaria were studied and faced by US army and American sanitarians (Walter Reed, William Gorgas), and later by the Rockefeller Foundation. Impeding mosquito reproduction and avoiding bites and spreading chemical products were useful. Fortunately, an effective vaccine against yellow fever was later discovered. During nineteenth century, malaria expanded all around the world, arriving to the central extensions of America and Eurasia. Emigrations and settlements, wars, famines, climate change, and revolutions in travels, such as railroads and steamships, contributed. During the Napoleonic Wars and the American Civil War, malaria was seriously extended, as it was also during wars and revolutions in twentieth century.

In the interwar years, the Rockefeller Foundation and the League of Nations sponsored international campaigns against the disease. Many governmental campaigns also fought against malaria; several national programs were effective, from Taiwan and China to the United States, Brazil, and Argentina, passing across the Mediterranean basin, from Italy to Egypt. Opinions and campaigns oscillated between quinine treatment, fighting against mosquitoes (by dichlorodiphenyltrichloroethane (DDT)), and improvements in life, education, and land sanitation, clearing up the marshy areas. Malaria has been eradicated from Europe thanks to drainage, improvements in crop cultivation, mechanical barriers, quinine and modern drugs such as atebine and chloroquine, and insecticides. Colonial settlements entered tropical areas backed by quinine, nets in beds,

hygiene, and sanitation, but transmissible diseases were continuously a serious burden for colonial armies, in America, Africa, or Asia. Some chemical products such as DDT were a successful support for soldiers, travelers, merchants, or settlers. Nevertheless, in 1955, the World Health Assembly, meeting in Mexico, warned against the resistance of the mosquitoes to insecticides. Mosquitoes are still today carrying both diseases, and also dengue. Chagas disease produced by *Trypanosoma cruzi* is endemic in America, and sleeping sickness caused by *Trypanosoma brucei* (*rhodesiense* and *gambiense*) occurs in Africa.

Today, an effort is being made to involve governments in the fight against malaria, a disease that represents a danger to nearly half of the world's population. In Africa, the situation is very serious due to the changes in agriculture and irrigation as well as in work and migrations, the political and economic problems, the severe droughts, famines and wars, the bad sanitary conditions following in the wake of housing expansion and deforestation, and harsh social and economic exploitation. Together with the WHO and the United Nations International Children's Emergency Fund (UNICEF), regional institutions such as the Pan American Health Organization and the US government are financing programs of eradication. The WHO, through the 51st World Health Assembly of 1998, set up the program 'Roll Back Malaria' and, with aid from UNICEF and the World Bank, is endeavoring to bring about economic and sanitary improvements in developing countries. In twenty-first century, The Global Fund to Fight AIDS, Tuberculosis and Malaria is attaining important amount of resources and success. Nets treated with insecticides are very useful for protection against mosquitoes. Today, hope is also placed on vaccination and in the sterilization, or genetic modification, of the mosquitoes. Yet, malaria continues to be endemic in warm zones of America, Asia, and with severe cruelty, in Africa.

The rapid increase of world population in huge metropolitan areas was accompanied by new settlements and emigrations, wars, conflicts and revolutions, and marginalization of aboriginal cultures and disinherited peoples. Throughout the past two centuries, economical, social, and political expansion of the West led to studies on tropical medicine, creating hospitals and laboratories and institutions on public health and sanitary departments. Cholera continues to be feared in Asia, between India and the Far East, and also in warm zones in America and Africa. Wars and catastrophes, travels and migrations, as well as famines and unhealthy conditions allowed the expansion of the cholera germ, the *Vibrio cholerae* isolated by Robert Koch in 1883, as was the case of the recent tragedy of Haiti. At the end of nineteenth century, the third outbreak of bubonic plague allowed its bacteriological and epidemiological description. The germ of bubonic plague *Yersinia pestis*, discovered by Yersin and Kitasato, is still to be found throughout the world. The germ is carried by rats, *Rattus rattus*: rat fleas are the arthropod vectors transmitting 'epizootic' plague to humans from rodent hosts, and related species, but transmission among humans is also possible. Almost forgotten in the developed world, with several and very effective antibiotic therapies, there is, nevertheless, always the possibility that the devil may once more send his rats to the old, rich cities.

But other viruses have taken its place in the twentieth century. Thus the very old and common influenza caused several cruel and heavy outbreaks; among many others,

influenza pandemics began in 1918 and reappeared in 1957, 1968, and 2003: these were known, respectively, as the 'Spanish flu,' which perhaps originated in the United States, the 'Asian flu,' the 'Hong Kong flu,' and the 'Avian flu,' mostly coming from Asia. Vaccines are very useful in its prevention, as they are also in the control of many infectious childhood diseases, such as measles, rubella, mumps, chicken pox, whooping cough, diphtheria, and so on. Old diseases such as poliomyelitis exploded in the United States and Europe, affecting nonimmune children, and this disease has only been controlled in developed countries by means of vaccination. During the past century, individuals have observed astonished the spread of new or reemerging diseases, from plague, cholera, influenza, measles, and malaria, to AIDS, West Nile fever, Avian flu, severe acute respiratory syndrome, resistant tuberculosis, hemorrhagic fever (Ebola virus disease), transmissible spongiform encephalopathy (Creutzfeldt-Jakob disease), and others. Unfortunately today, many frequent or rare diseases do not have adequate treatment, and many germs are developing resistance to antibiotics, a serious threat for its affectivity.

AIDS has meant a development in the study of viral infections, and this disease has associations with the exploitation of poor people, unsafe sex, and drug trading, but it also affected an elite sector, which has sprung rapid research in the field. The world commotion surrounding this disease has served both to reveal human altruism on the one hand, and, on the other, contempt toward those infected by the disease, since AIDS became more and more the lot of the poor, mostly in large areas of Africa, or India, and of downcast or marginal groups such as the chronic patients, drug addicts, prostitutes, and homosexuals. Nevertheless, heterosexual transmission through unsafe sex and transmission from mother to child are today serious dangers. Safe sex and antiretroviral treatment are the best contention, while a vaccine will be obtained perhaps in the coming future.

Mental affections were considered till modern times, as devilish, criminal, or vicious behaviors, more an ethical or social than a medical problem. In the eighteenth century, the natural explanation of mental disease was established, according to Alexander Crichton, or Philippe Pinel, and in the nineteenth and twentieth centuries, its psychogenic process, following Sigmund Freud. From Pinel to Freud, the possibility of treatment and remedy of mental disease was established, leading the soul of the patient with convictions and health measures to the cure. The discovery in recent times of some effective pharmacological drugs acting on human mind, and conduct, has allowed better treatment. Reclusion was considered a doubtful possibility, restricted to some severe problems. The old lunatic asylums, founded since Middle Ages, were being abolished or completely renewed. Nevertheless, mental illnesses wreak serious havoc at present times all around the world, affecting all ages, genders, and conditions, without any distinction. Sometimes, the misunderstanding regarding mental diseases still produces cruel treatments, harsh restrictions, or punishment.

During the past decades, economic and social improvements led to quick globalization and urbanization, with longer human life and changes in disease patterns. Political, sanitary, and economic development managed to stamp out infectious morbidity, and forms of suffering or living illnesses are

changing. UNICEF and WHO, in collaboration with governments, foundations, and NGOs, promote successful campaigns of vaccination, especially focusing on children. The burden of infectious, parasitic, and transmissible diseases changed to chronic diseases and sufferings related with aging and lifestyles, likewise, nutritional disorders, cancer, or heart and brain vascular diseases. On the other hand, the increase in life expectation favors the development of Alzheimer and other chronic and degenerative diseases, neurological and muscular diseases, mental affections such as schizophrenia, mania and depression, diabetes, vascular diseases, and of course, the terrible presence of cancer. Accidents and traumatism, due to traffic and sports, factories and radiation, or even home accidents, are something that the twenty-first century is inheriting. Blindness, deafness, dumbness, and other frequent physical and mental disabilities, with multiple origins in traumatism or accidents, genetic, metabolic and degenerative diseases, infectious diseases such as poliomyelitis, or cerebral and vascular affections, make daily life difficult and, at the same time, make economical, institutional, and social support necessary. Incapacitating and chronic diseases lead to severe dependency and so the need for protection of disabled individuals is leading to the founding of patients' associations looking for help and justice, creating new rights and demands. Ghettos and migrations, hard work, poverty and unemployment, and some of the old drugs such as alcohol, heroine, and tobacco or new synthetic ones are causing havoc even to the rich world.

But in developing countries, the old morbidity due to transmissible diseases continues to exist, maintaining a very low life expectation. Certainly, the increase of migrations and of urban population are requiring more water, food, and energy, producing climate warming, deforestation and agriculture changes, and dangerous issues such as waste, toxics, and pollutants. Potable water, health services (medical care or medical drugs), sanitation and hygiene are urgently requested. Environmental degradation and the confrontations between national, social, and ethnic groupings are a serious danger for healthy life. China, Japan, and South Korea and other expanding countries have lived through these challenges in different ways from diverse British colonies such as Australia or India. Different traditions and cultures are extremely important to understand the relations between peoples and diseases. Death is most rampant amid the least protected and poorest people, especially women, children, and the elderly, with harsh sufferings such as wars, famine, and exploitation. Under such circumstances, diseases caused by deprivation and infection continue to be the most rampant, causing high death rates among the population. Old and new diseases, such as malaria and AIDS, are ruining great stretches of Africa. Leprosy and cholera, tuberculosis and tetanus, and many child diseases, such as mumps, measles, tetanus, or meningitis are in poor countries and populations the salt of the Earth. Private and public funds, and international solidarity, are always necessary for relieving these harsh sufferings. The United Nations Millennium Development Goals are also facing them.

According to the WHO report *Global Health Risks* (2009), the better or worse conditions for mortality and for the burden of disease are seriously conditioned by several circumstances, related to lifestyles: blood pressure, blood glucose, physical activity, alcohol and tobacco, weight, safe sex, safe water,

sanitation, and hygiene. Obviously, these circumstances and their consequences are very different, depending on the social level of individuals and the public health governance of nations and peoples. If developing countries are freeing themselves from transmissible diseases, now they are fighting against noncommunicable diseases, related to social level, health organization, and hygienic customs. Some American, Asian, and African countries are still supporting a terrible burden of disease, which is also shared by low-income population in developed countries. The Rio Political Declaration in the World Conference on Social Determinants of Health (WHO-Rio de Janeiro, Brazil, 21 October 2011) is a new call looking for equity, justice, and universality of health. It has recommended adopting better governance for health and development; promoting information, justice, and participation in policy making and during the implementation process; including civil society like indigenous people; and reducing health inequities in the health sector. This Declaration promotes research on the relationships between social determinants and differences (economic, ethnic, and gender inequalities) and health equity. We are all convinced about the relation between poverty, social discrimination, low education and low sanitation, and diseases and death.

See also: Environmental History; Freud, Sigmund (1856–1939); Galton, Sir Francis (1822–1911); Historical Demography; Medicine, History of Western; Science, History of; Welfare State, History of.

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